

REMARKS

Status of the claims

With the above amendments, claims 15, 38, 40, 42, and 43 have been amended, claims 25, 28, and 41 have been canceled without disclaimer of or prejudice to the subject matter therein, and claims 47-51 have been added. Accordingly, claims 15, 16, 20-23, 32-34, 38-40, and 42-51 are pending and ready for further action on the merits. No new matter has been added by way of the above amendments. Support for the amendments and new claims 47-51 can be found, for example, specifically at paragraphs [0006], [0029], [0040], [0051]-[0054], and [0069] as well as elsewhere throughout the specification and original claims.

Applicants respectfully point out that claim 46 was entered in the previous Response but not considered in the Office Action dated January 29, 2008.

Reconsideration is respectfully requested in light of the following remarks.

35 U.S.C. § 102 and Claims 15, 16, 21, 22, 25, 27, 28, 32-34, 28-40, and 42-45

The Examiner has rejected claims 15, 16, 21, 22, 25, 27, 28, 32-34, 28-40, and 42-45 under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 3,854,184 to Katz (hereinafter “Katz”). Applicants traverse.

Applicants respectfully submit that “a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The Examiner has failed to disclose each and every element set forth in the claims.

For example, claim 15, as amended, provides:

15. A method of disassembling a preloaded and interlocked assembly having a first element and a second element, the method comprising:

heating the first element comprising an initial dimension to a first temperature sufficient to expand the initial dimension to a first dimension, the first dimension greater than the initial dimension; and

removing the first element from the assembly

wherein the preloaded and interlocked assembly comprises at least one of the first element or the second element being deformed, wherein the first element can only be removed from the assembly when the first element reaches the first temperature, and wherein heating the first element from the assembly is a means to disassemble the assembly.

Claim 15 includes the limitation that the assembly is preloaded and interlocked such that at least one of the first element or the second element is deformed. Claims 40 and 43 contain similar limitations. A preloaded and interlocked assembly, as used throughout the specification, refers to an assembly which remains intact due to both frictional force (often associated with shrink-fitting couplings) as well as mechanical interference or force (often associated with snap-fitted couplings).

In contrast, Katz discloses a conventional shrink fit assembly.¹ Katz describes a demountable printing cylinder that operates by increasing the temperature of a closure to enlarge a through bore to slide the mandrel out from the end closure.² The assembly of Katz is held in place by the frictional forces exerted between the contacting surfaces of the closure and the mandrel. The direction of the force holding the Katz apparatus in place is limited to an axial direction, i.e. perpendicular to the surface of the mandrel. Any physical expansion of the enclosure in Katz permits “free sliding movement of the end closures along the mandrel.”³ Thus,

¹ See Katz, col. 2, lines 27-32.

² See *id.* at col. 3, lines 52-60.

³ See *id.* at col. 3, lines 59-60.

once the frictional force is removed or reduced by a temperature change, the assembly of Katz would no longer operate to keep the elements in place.

Alternatively stated, Katz does not describe an assembly that remains intact due to the presence of a mechanical interference. The presently claimed methods each include disassembling a preloaded and interlocked assembly. Such a preloaded and interlocked assembly comprises mechanical interferences to keep the assembly intact. Further, in claims 15 and 43, at least one of the first element or the second element is deformed. In claim 43, the mechanical interference deforms at least one of the first element or second element. Katz does not provide any methods where the mandrel or collar is deformed. Thus, Katz fails to describe each and every element of the presently claimed methods.

The presence of “preloaded and interlocked assembly” in the preamble distinguishes the presently claimed methods over Katz. “If the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is ‘necessary to give life, meaning, and vitality’ to the claim, then the claim preamble should be construed as if in the balance of the claim.” *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165-66 (Fed. Cir. 1999).⁴ The introductory language points out an express limitation upon the claims to define the presently claimed invention. The preamble of the presently claimed methods can be necessary to give life, meaning, and vitality to the claim.

⁴ Applicants direct the Examiner’s attention to *Kropa v. Robie*, 187 F.2d 150, 88 USPQ 478 (CCPA 1951). As found in the MPEP § 2111.02, the *Kropa v. Robie* court stated:

A preamble reciting “An abrasive article” was deemed essential to point out the invention defined by claims to an article comprising abrasive grains and a hardened binder and the process of making it. The court stated “it is only by that phrase that it can be known that the subject matter defined by the claims is comprised as an abrasive article. Every union of substances capable inter alia of use as abrasive grains and a binder is not an ‘abrasive article.’” Therefore, the preamble served to further define the structure of the article produced.

See MPEP §2111.02 (citing *Kropa*, 187 F.2d at 152, 88 USPQ at 481).

Moreover, the preamble of claims 15, 40, 42, and 43 distinguishes each claim from Katz, which describes conventional shrink-fit couplings, not a preloaded and interlocked assembly.

Additionally, claims 40 and 42 include the limitation where the first element has a thermal expansion coefficient of between approximately 10 micrometers per degree Celsius per meter and approximately 25 micrometers per degree Celsius per meter. Katz additionally fails to describe this limitation.

In view of the foregoing, Applicants respectfully assert that claims 15, 40, 42, and 43 are not anticipated by Katz under § 102(b) and respectfully request that the Examiner withdraw the rejection of claims 15, 40, 42, and 43. As claims 16, 21, 22, 32-34, 38, and 39 depend from and further limit claim 15 and claims 44-45 depend from and further limit claim 43, Applicants respectfully assert that claims 16, 21, 22, 32-34, 38, 39, and 44-45 are patentable over Katz and respectfully request that the Examiner withdraw the rejections of 16, 21, 22, 32-34, 38, 39, and 44-45.

35 U.S.C. § 103 and Claims 20, 23, and 41

The Examiner has rejected claims 20, 23, and 41 under 35 U.S.C. § 103(a) as being unpatentable over Katz. Applicants traverse.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). For similar to reasons as set forth above, Katz does not teach or suggest all the limitations of claims 15 and 40. Katz describes and teaches a demountable printing cylinder that utilizes conventional shrink-fitting techniques. The assembly of Katz relies solely upon the frictional forces exerted between two surfaces in order to keep the assembly intact. Katz does not describe

or teach a preloaded and interlocked assembly that utilizes both frictional forces and mechanical interferences or forces.

Conventional shrink-fitting techniques, like those found in Katz, is a labor-intensive coupling often with high costs required to create such assemblies.⁵ Alternatively, conventional snap-together or snap-fit techniques provide an assembly that may be easier to create, but often sacrifices rigidity. A preloaded and interlocked assembly, as recited in the presently claimed methods, provides a strong assembly with no or minimal play or clearance between the elements while utilizing minimal amounts of time, effort, and/or energy to create the assembly. A preloaded and interlocked assembly eliminates clearances normally required by a snap-fit coupling which allows a stronger assembly.⁶ Further, a preloaded and interlocked assembly as recited in the presently claimed methods includes elements that are sufficiently deformed to preload the assembly.⁷

As previously set forth, the preloaded and interlocked assembly as recited in the present methods may operate in the absence of frictional forces. Katz does not describe or teach a rigid assembly that operates utilizing frictional forces *and* mechanical forces where the elements of the assembly mechanically interfere with a corresponding element. Accordingly, the teachings of Katz are insufficient to render claim 15 or 40 *prima facie* obvious under 35 U.S.C. § 103(a). In view of the foregoing, Applicants respectfully assert that claims 15 and 40 are patentable over Katz under § 103(a). As claims 20 and 23 depend from and further limit claim 15 and claim 41 depends from and further limits claim 40, Applicants respectfully assert that claims 20, 23, and 41 are patentable over Katz and respectfully request that the Examiner withdraw the rejections of claims 20, 23, and 41.

⁵ See Specification at ¶ [0007].

⁶ See *id.* at ¶ [0007]

⁷ See *id.* at ¶ [0040].

Claim 46

Claim 46 was not examined in the Office Action dated January 29, 2008. Applicants respectfully assert that the cited prior art does not render claim 46 anticipated or obvious. Katz does not disclose an assembly that is at least partially snap-fit. Instead, Katz is limited to a conventional shrink-fit coupling. The assembly of Katz is bound by friction only. Accordingly, Applicants respectfully request that claim 46 be allowed.

New Claims 47-51

New claims 47-51 have been entered into the present application. Applicants respectfully submit that the cited prior art does not render new claims 47-51 anticipated or obvious. Accordingly, Applicants respectfully request that claims 47-51 be allowed.

CONCLUSION

With the above amendments and remarks, Applicants believe that all objections and/or rejections have been obviated. Thus, each of the claims remaining in the application is in condition for immediate allowance. A passage of the instant invention to allowance is earnestly solicited.

Applicants believe that no additional fee, other than the fee submitted in connection with the petition for extension of time and additional claims, is necessary; however, should a fee be deemed to be necessary, the Commissioner is hereby authorized to charge any fees required by this action or any future action to Deposit Account No. 16-1435.

Should the Examiner have any questions relating to the instant application, the Examiner is invited to telephone the undersigned (Reg. No. 58,909) at (336) 607-7347 to discuss any issues.

Respectfully submitted,

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